

Cello Wizard

User Manual

Version 1.16



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Table of Contents

1. Introduction

2. Software Installation

3. Instructions

Step 1a	–	Setting the communications port
Step 1b	–	Configuring the Cello
Step 2	–	Signal Strength Testing
Step 3	–	Synchronizing the Cello clock
Step 4	–	Setting the dial-out information
Step 5	–	Entering the site name
Step 6	–	Live inputs
Step 7	–	Finally

Appendix 1 Cello Mk4 Flow Input Connections

Appendix 2 Universal Cello Cable Connections

Appendix 3 Cello I.S. Flow Input Connections

Appendix 4 Cello 5 Meter Reader Connection Details

1. Introduction

The Cello Wizard software is designed for commissioning and maintaining Technolog's series of Cello data loggers. The software is available for Microsoft Windows on both the PC and Pocket PC platforms, from Windows 95 onwards and Pocket PC 3 onwards.

The Cello Wizard is capable of

- Configuring Cello
- Live signal strength tests and signal strength recording
- Setting the Cello's internal clock
- Programming the Cello's dial out numbers and site identification
- Taking live readings from the Cello's inputs
- Starting and stopping the Cello's logging function

The Cello Wizard can also be used to commission Cello as part of a Modulo Control system.

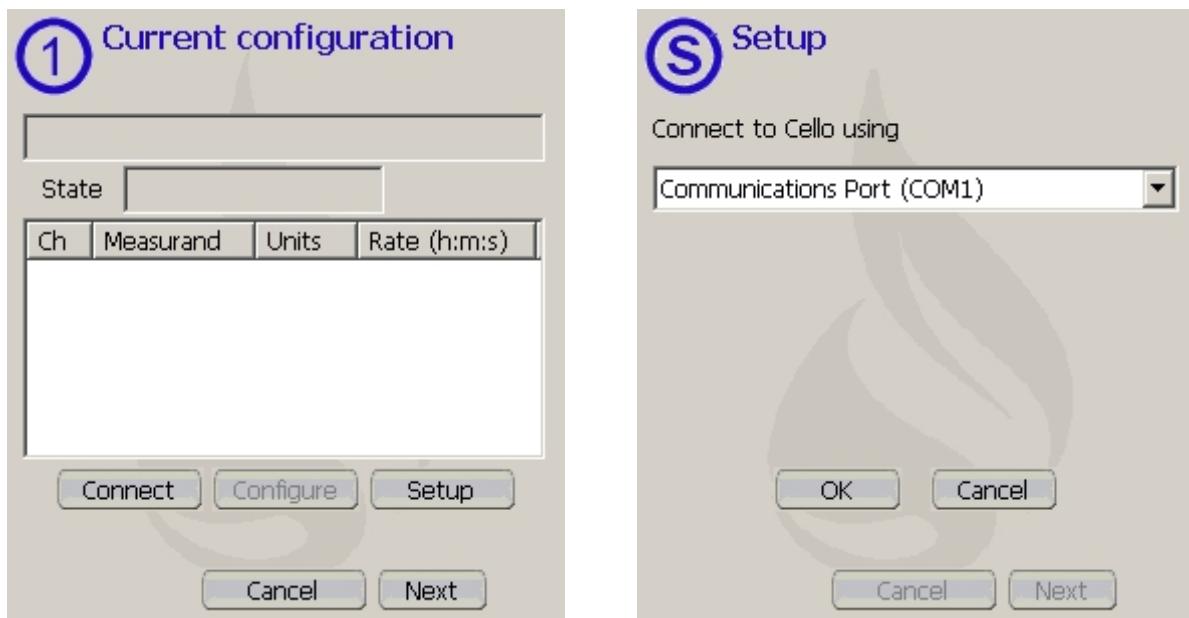
2. Software Installation

- Place the Cello Wizard disc into CD drive, the PC should automatically run the disc and start the installation process. If it doesn't automatically install: Run SETUP.EXE and INSTALL.)
- Follow the step by step instructions on screen to install the software.

3. Running The Wizard

Step 1a: Setting the communications port.

On executing the Cello Wizard you will see the initial page (below left). Ensure that you are connecting via the correct communications port by selecting **Setup** and then choosing from the drop down menu, before pressing **OK** (below right). This usually will only require doing once. Each time the Wizard is restarted it will use this setting as its default.



Step 1b: Configuring the Cello

Attach the Cello to the PC using the Logger to PC cable. Select **Connect** to establish communications with the Cello. If communications fail, check the communication port settings.

The Cello details will be displayed on the screen (figure 1). This will show the current status and the active channels. Cellos are shipped pre-configured for a certain application, however you may wish to change the mode of the Cello by re-configuration. Choose **Configure**, select the required configuration file for your Cello, and press open (figure 2). Details will be displayed about the configuration file settings (figure 3). Select **Yes** if you are sure this is the mode you want, and the Cello will be re-configured. Note at this stage any data in the Cello will be lost.

Press **Next** to go to the Signal strength testing screen.

Figure 1

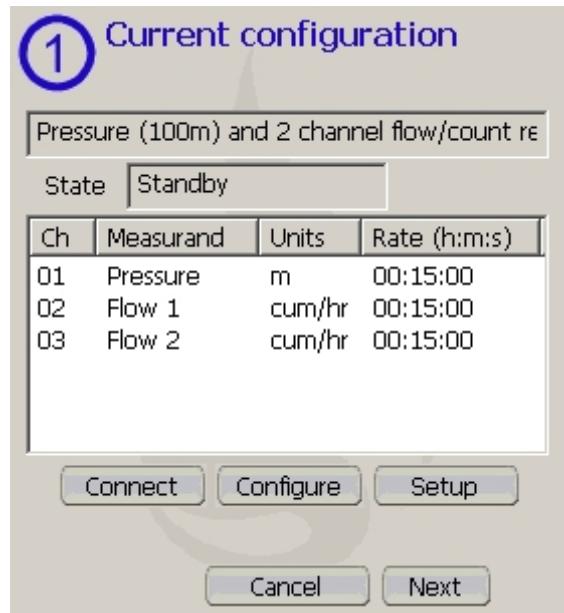


Figure 2

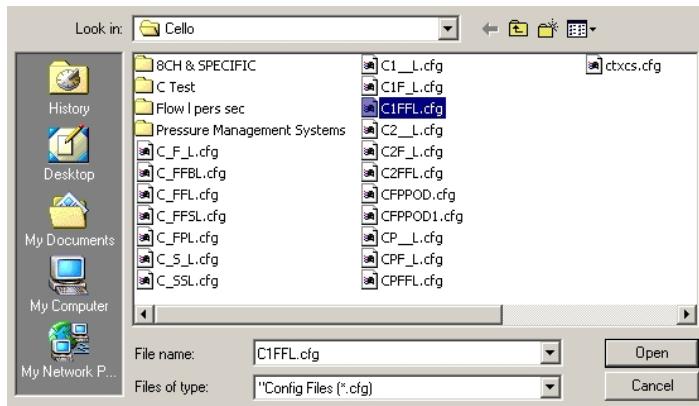
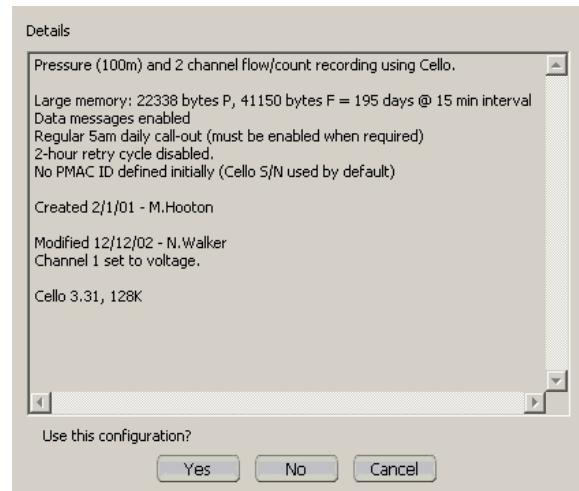


Figure 3



Step 2: Signal Strength Testing

Two methods of signal testing are available: a spot test and the preferred two minute signal strength test. The main differences are that the two minute test can be done with the Cello disconnected from the PDA or PC, this is ideal for testing underground installations. The logging function in the Cello is temporarily used to record the signal strength information for a period of two minutes. The recorded signal strengths are then retrieved and displayed on the PDA or PC in a graphical format.

The spot test uses the display of the PDA or PC to show the instantaneous readings as communications between the Cello and PDA or PC are continuous. The spot test is useful for above ground installations or where the communication cable can be carefully passed down the side of a chamber cover (without damaging it) with the Cello mounted underground.

To do the spot test (right), click on the **Start** button. Cello Wizard will initialize the Cello modem and begin testing signal strength. On the display you will see all the networks detected by the modem and SIM with the strongest readings first. These readings are updated every five seconds until the **Stop** button is pressed.

All signal strength readings are based on a scale that runs from 0-63. A signal strength reading of about 15 or more for any one network is desirable. Ideally two or more base stations with a signal greater than 15 is optimal.

The two minute test (below right) is initiated by choosing the red record button. You will be prompted to disconnect the Cello and install it in your preferred installation position. Once the two minutes are complete, reconnect the Cello and download your signal strength data by pressing the green play button.

After the two minute test has been completed a text (.txt) file will have been created and saved in the Cello Wizard Data folder. This file shows all the signal strengths recorded in the two minute period. This file can be viewed in any word processing software.

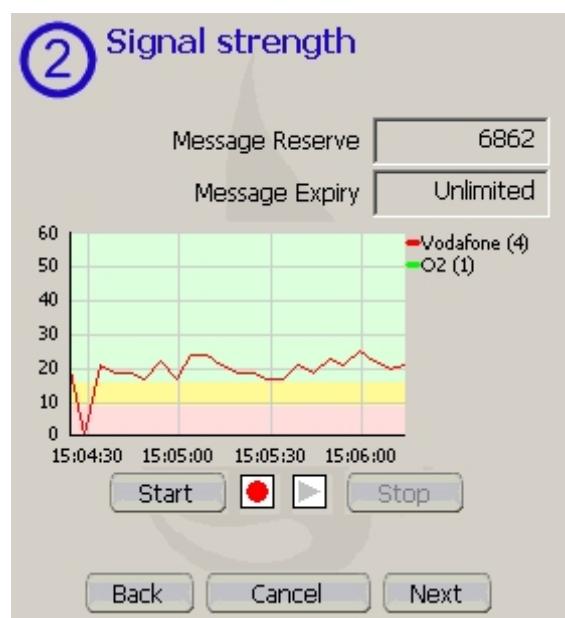
When you are happy with your installation position, choose **Next**.

Message Reserve

This field indicates the number of SMS messages left in the Cello.

Message Expiry

Indicates the predicted message expiry date, being 3 months from this date. If this field displays "Expired" then this must be cleared prior to use. Contact Technolog or Utility Data Services and request a message expiry cleared message.



Step 3: Synchronizing the Cello clock.

The Set clock screen displays the current time according to the PDA or PC clock and the time according to the Cello's internal clock. If you wish to change the Cello time to that of the PC then choose Set Time. Once complete, choose **Next**.

Typically, loggers are set to GMT. In the UK the Cello clock will be automatically adjusted over time to synchronise with the GSM network clock (network permitting).



Step 4: Setting the dial-out information

From the Dial-out details screen the user is able to specify the number for the host PC that the Cello is to send its data and alarms to. The time of day that the data is sent is also programmable.

The Host number is entered manually. If the UDSL "Utility Data Service Limited" Data Centre at Technolog's premises in Derbyshire is to be used, these numbers are pre-programmed in the software and accessible by right clicking or click and holding in the entry field and choosing 'UK Cellos'. This is not applicable if overseas.

Enter the time at which you wish the data to be sent each day.

Enable for Modulo Control

If the Cello is to be used for Modulo control then tick the box to enable this function.

Once you are satisfied with the dial-out details select **Next**.



Advanced Dial - Out

Send meter index to host computer

Tick this box to enable index readings to be transferred with the data to the host PC at the time of the regular dial-out.

Send error log to host computer

Tick this box to enable error log information to be transferred with the data to the host computer at the time of the regular dial-out.

View error log

Select this button to view the Cello Error log. This information is essential when trying to fault find Cello problems.



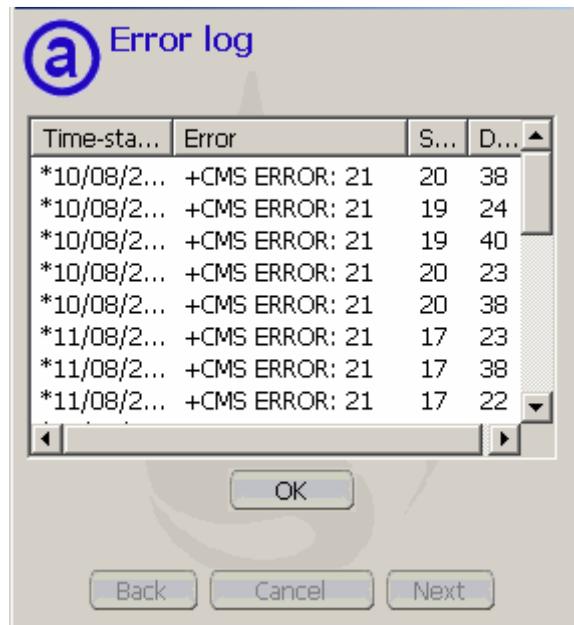
Error Log

This information is essential when trying to Cello fault find Cello problems.

If an error is reported during GSM transmissions then it will be reported in this error log.

This information includes:-

- **Date and Time stamp** of the error
- **Error results**
- **Signal strength** at the time of the error
- **Duration** of attempted communications



Time-sta...	Error	S...	D...
*10/08/2...	+CMS ERROR: 21	20	38
*10/08/2...	+CMS ERROR: 21	19	24
*10/08/2...	+CMS ERROR: 21	19	40
*10/08/2...	+CMS ERROR: 21	20	23
*10/08/2...	+CMS ERROR: 21	20	38
*11/08/2...	+CMS ERROR: 21	17	23
*11/08/2...	+CMS ERROR: 21	17	38
*11/08/2...	+CMS ERROR: 21	17	22

OK

Back Cancel Next

Step 5: Entering the Site Name.

On the site identification screen you can enter a site name, Site number and PMAC ID for your Cello. Once entered, choose **Next**.

The Site Name should be a logical site name

The Site No can be a user defined reference number

The PMAC ID must be a unique 5 digit number (i.e. 00001 → 99999).

Note these fields are dependant on the configuration file used

5 Site identification

Site name:	George Street PMA
Site No.:	00000001
PMAC ID:	12345

Back Cancel Next

Step 6: Live inputs

The live inputs screen enables you to cycle through the active channels and initiate a live reading on each of the inputs.

Each active channel can be checked in turn by selecting the channel number and pressing **Start**. Ensure that the pressure port is vented to atmosphere prior to setting the pressure channel to zero. Pressure channels should be set to zero before connection to the pressure source by pressing the **Zero** button. Ideally, checks should be made against another pressure gauge to ensure that they are reading correctly.

Where channel scaling is applicable, for example in flow channels, this can be edited in the scale factor field.

Meter index values can be entered in the index field.

Use the **Stop** button to halt readings and move to the next channel.

Once complete select **Next**.

6 Live inputs

Channel	2
Flow 1	cum/hr
Scale factor	0.01 cum
Index	7114752.63

Start Zero Stop

Back Cancel Next

Step 7. Finished.

On the final screen, choose **Finished** to write the details to the Cello. Choose **Start Logging** to begin recording data and enable regular daily dial-out. The Cello Wizard will close down. The Cello will send the contents of its notepad to the host PC and begin recording at the desired recording interval.

If set for Modulo Control then control messages will be initiated at the first logging interval.



Appendix 1

Application Note

Title: Cello Mk. IV FLOW INPUT CONNECTIONS

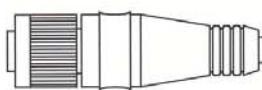
Document No: TAN115 Rev: B Date: 19 / 04 / 04

Sheet 1 of 1

DMR: 2708



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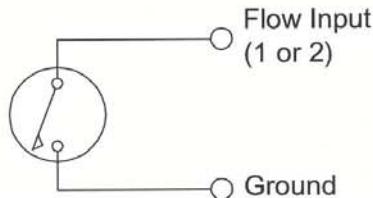


SS

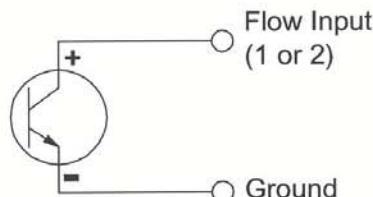
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Cable core	Function
Green / Yellow (or Black)	Ground
Brown	Flow Input 1
Blue	Flow Input 2

Switch Closure Connection



Open Collector / FET Connection



Notes

- 1) The information contained in this document relates to the connection of external equipment to the Technolog Cello Mk. IV GSM data logger using the Technolog supplied flow input cable.
- 2) Flow Input 1 is always available on the Cello whilst Flow Input 2 is a configuration file option.
- 3) Where the connection is required to external equipment providing 2 flow channels, then the 'forward' flow should be connected to Flow Input 1 with the 'reverse' flow being connected to Flow Input 2.

Appendix 2

Application Note

Title: Universal ('Multi channel') Cello input cable

Document No: TAN119 Rev: C Date: 27 / 05 / 04

Sheet 1 of 3

DMR: 2737



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UNIVERSAL CELLO INPUT CABLE (CBL006) - COLOUR CODE

Connector	Termination	Cable core	Connector	Termination	Cable core
Pin 'A'	Channel 1	White	Pin 'G'	Channel 7	White / Black
Pin 'B'	Channel 2	Orange	Pin 'H'	Channel 8	Orange / Black
Pin 'C'	Channel 3	Blue	Pin 'J'	Control Output 1	Blue / White
Pin 'D'	Channel 4	Green	Pin 'K'	Control Output 2	Green / White
Pin 'E'	Channel 5	Blue / Black	Pin 'L'	Positive Supply	Red
Pin 'F'	Channel 6	Green / Black	Pin 'M'	Ground	Black

Input type ***Description***

STATE: Universal Cello records the date & time of each change in the state of the input. Suitable input types are 'switch closure' & 'voltage level'.

EVENT: Universal Cello records the date & time of each event. Events may be very brief but should not repeat at more than 10Hz, i.e. 10 events / second. Suitable input types are 'switch closure' & 'voltage pulse'.

COUNT: Universal Cello totalises the events that occur in the logging period, stores the value & zeroes the counter. Suitable input types are 'switch closure' & 'voltage pulse'.

ANALOGUE: At each logging interval, Universal Cello samples the input signal & converts it to a digital value. Suitable input types are 'analogue voltage' & '4-20mA' inputs.

Application Note

Title: Universal ('Multi channel') Cello input cable

Document No: TAN119 Rev: C Date: 27 / 05 / 04

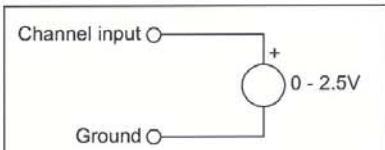
Sheet 3 of 3

DMR: 2737



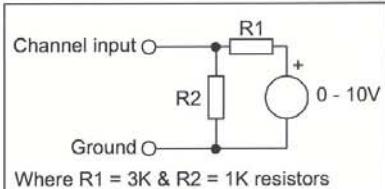
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0 - 2.5 Volt analogue input connection



0 - 10 Volt analogue input connection

Calculation of R1 & R2 for other analogue inputs
(Note: both resistors to be precision components)



Calculation of R1 & R2 for other analogue inputs.

Rule 1 $(R1 + R2) \leq 10K$

Rule 2 $R2 = \frac{2.5V}{V \text{ input}} \times (R1 + R2)$

For example, for an input voltage of 0 to 18V:-

Applying Rule 1: Let $R1 + R2 = 7.2K$

Applying Rule 2: $R2 = \frac{2.5}{18} \times 6K \quad \text{i.e. } R2 = 1K$

Hence: $R1 = 6K2$ (use 6K19)

Note

- 1) Applying these rules may take some practice. If you cannot find suitable values for R1 & R2 then aim to change the total of R1 & R2. In the example above we could have set R1 + R2 to be 4K, however, this would have meant R2 would need to be 698R & R1 would be 3K32.

Application Note

Title: Universal ('Multi channel') Cello input cable

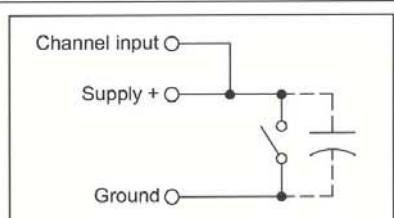
Document No: TAN119 Rev: C Date: 27 / 05 / 04

Sheet 2 of 3
DMR: 2737



Switch input / volt - free contact connection

When connecting a volt - free contact (e.g. R5 gas meter output) or switch (e.g. Kent Helix 2 / 3000 water meter) to the Universal Cello then the wiring connections are as shown:-



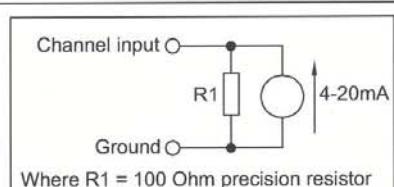
Notes

- 1) Some switch closure contacts may 'bounce' resulting in high values being recorded. This may be solved by fitting a 0.1uF (100nF) capacitor across the switch as shown.
- 2) Where a single channel input of this type is to be attached then the termination "Supply +" is connected to "Positive Supply" (pin 'L'). Where a second input channel is attached, termination "Supply +" is connected to "Control Output 1" (pin 'J'). For a third input channel, termination "Supply +" is connected to "Control Output 2" (pin 'K'). The use of either Control Output is handled by the configuration file in the Universal Cello - contact Technolog for details.
- 3) Where more than 3 channel inputs of this type are to be connected, or to simplify the wiring in 2 or 3 channel applications, then various interfaces are available that allow separate configuring of pull- ups & debouncing & also include separate battery power for contact biasing.

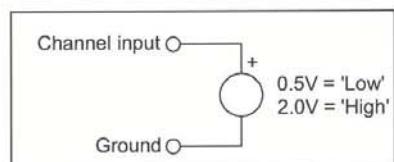
4-20mA Input

Note

- 1) Cables with built-in resistors for 4-20mA applications are available from Technolog



Voltage level / Pulse input



Appendix 3

Application Note

Title: CELLO I.S. FLOW INPUT CONNECTIONS

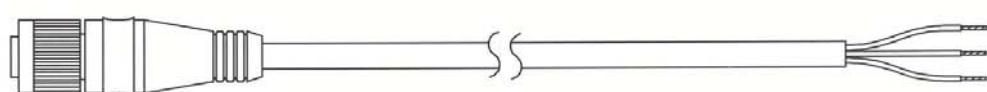
Document No: TAN108 Rev: B Date: 19 / 04 / 04

Sheet 1 of 1

DMR: 2708

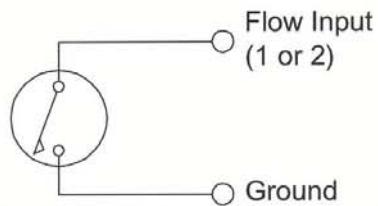


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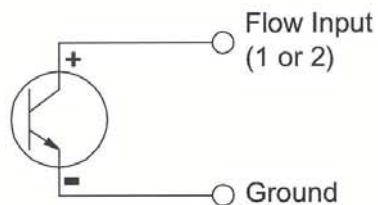


Cable core	Function
Green / Yellow (or Black)	Ground
Brown	Flow Input 1
Blue	Flow Input 2

Switch Closure Connection



Open Collector / FET Connection



Notes

- 1) The information contained in this document relates to the connection of external 'simple' apparatus to the certified intrinsically safe ('I.S.') Technolog Cello I.S. GSM data logger using the Technolog supplied 'Cello I.S. flow input cable'.
- 2) As the product to which the cable is connected is certified intrinsically safe, it is the responsibility of the Customer, or their representative, to ensure that all connections are made in accordance with all applicable national & international standards.

Appendix 4

Application Note

Title: Cello 5 Meter Reader connection details (Non I.S.)

Document No: TAN123 Rev: A Date: 10 / 08 / 04

Sheet 1 of 1

DMR: 2795



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